On a VARANUS and a FROG from BURNETT RIVER, QUEENSLAND, and a REVISION of the VARIATIONS in *LIMNODYNASTES DORSALIS*, Gray.

By Dene B. Fry, Junior Assistant.

(Plates i-iii, and Figs. 7-13.)

The Trustees have recently received from Dr. T. L. Bancroft several very interesting consignments of Reptiles and Batrachians, collected at Eidsvold on the Burnett River, Queensland. Amongst those deserving special attention are the two species here mentioned, a rare frog, *Hyla latopalmata*, Günther, and a new variety of *Varanus punctatus*, Gray, which is described as var. *orientalis*.

The collections also include a large series of a strikingly coloured form of *Limnodynastes dorsalis*, Gray, and it has been thought best to deal with them in conjunction with a detailed account of the distribution and variation of this widely distributed frog.

A list of the Reptiles and Batrachians from the Burnett River District has been published in Semon's "Zoologische Forschungsreisen in Australiens"[1] by Drs. Böttger and Oudemans. They record forty-two species, twenty-five of which are represented in Dr. Bancroft's collections, together with the following, which up till the present were not recorded from the district.

Batrachia.

Limnodynastes peronii, Dum. and Bibr.
,, *tasmaniensis*, Günther.
,, *dorsalis*, Gray, var. *dumerilii*, Peters.

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[1] Böttger and Oudemans—Semon's Zool. Forschung. Austr., v., 1894, Batrachia, p. 109, Ophidia, p. 115, Lacertilia, p. 129.

OPHIDIA.

Typhlops affinis, Boulenger.
Demansia textilis, Dum. and Bibr.
Pseudechis australis, Gray.
,, *mortonensis*, de Vis.
Denisonia nigrescens, Günther.
,, *carpentariæ*, Macleay.
Hoplocephalus bitorquatus, Jan.

LACERTILIA.

Gymnodactylus milii, Bory.
Diplodactylus taniocauda, de Vis.
Edura tryoni, de Vis.
Gehyra australis, Gray.
Lialis burtoni, Gray.
Varanus punctatus, Gray, var. *orientalis*, Fry.
Lygosoma (Hinulia) fasciolatum, Günther.
,, *(Leiolepisma) mundum*, de Vis.
,, ,, *peronii*, Dum. and Bibr.
,, *(Rhodona) fragile*, Günther.
Cryptoblepharus boutoni, Desj., var.
,, *gregi*, Gray.

VARANUS PUNCTATUS, *Gray*, var. ORIENTALIS, *var. nov.*

(Figs. 7-10.)

Head scales small, flat, sub-equal; largest and mostly hexagonal on the snout and between the eyes; smallest on the supraorbital region, and very much broken up and irregular on the occipital and pineal regions. Scales of back (fig. 7) flat, not keeled, larger and much broader than in the typical Western Australian form. Dorsal scales of anterior half of tail (fig. 9) as long as or slightly longer than broad, keeled and produced into a distinct black spine, which arises well inside the posterior margin of the scale; scales smallest on the base of the tail and becoming elongate and more sharply keeled towards the extremity. Abdominal scales in 74-77 rows.

Colour:—This variety appears to constantly differ in the greater brilliancy of the yellow spots which extend right on to the head, thus differing from the typical form in which the head and shoulders are uniform brown.

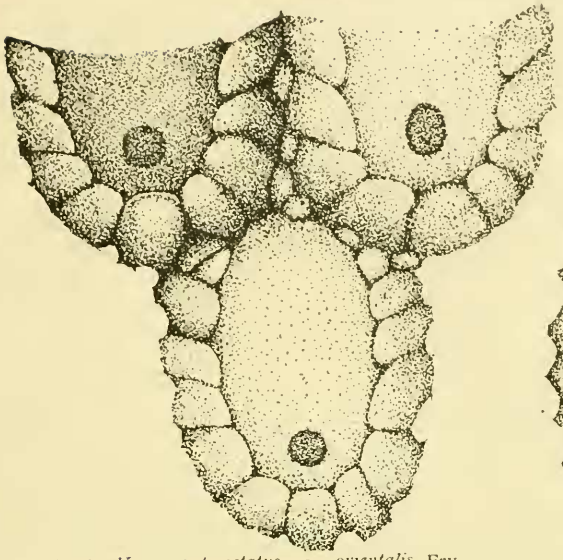


Fig. 7.—*Varanus punctatus*, var. *orientalis*, Fry. Mid-dorsal scales from the back.

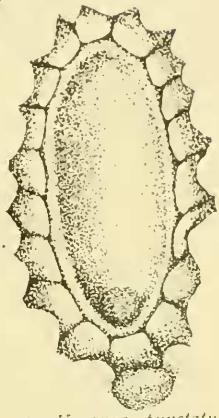


Fig. 8.—*Varanus punctatus*, var. *typica*. Mid-dorsal scales from the back.

The characters which distinguish this variety from the typical form are, the broad flat condition of the scales of the back (fig. 7) as opposed to the long, tectiform scales of the typical variety (fig. 8); the much broader and coarser scales on the anterior half of the tail (fig. 9, var. *orientalis*; fig. 10, var. *typica*). The caudal scales and colouration approach the condition in the more brilliant *V. acanthurus*, Blgr.

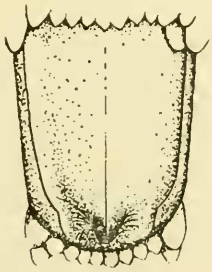


Fig. 9.—*Varanus punctatus*, Gray, var. *orientalis*, Fry. Scales from anterior half of tail (thirty-five or forty rows the from base on the middle line).

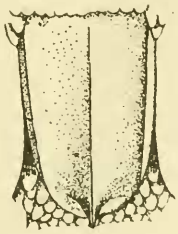


Fig. 10.—*Varanus punctatus*, Gray, var. *typica*. Scales from the same region as in Fig. 9.

Dr. Boulenger[2] gives the range of *V. punctatus* as North and West Australia and records it from Perth, Western Australia, North-west Australia, Port Essington, and Torres Strait. The type came from Shark Bay, Western Australia.

Locs.—In the Australian Museum are one adult and two half grown specimens from Eidsvold, Upper Burnett River, Queensland. They were collected by Dr. Bancroft and presented to the Trustees through Drs. J. Burton Cleland and T. Harvey Johnston of the Health Department of Sydney.

Type.—In the Australian Museum, Sydney.

Hyla latopalmata, *Günther.*

(Plate i. and figs. 11 and 12.)

Litoria latopalmata, Günther, Ann. Mag. Nat. Hist., xx., 1867, p. 55.

Hyla latopalmata, Boulenger, Brit. Mus. Cat. Batr., 2nd. ed., 1882, p. 414, pl. xxvi., fig. 4.

Hyla latopalmata, Fletcher, Proc. Linn. Soc. New South Wales, xxii., 1898, pp. 681 and 2.

Habit very slender. Head as broad as or slightly broader than long, the measurement taken at a line drawn between the hinder margins of the tympana. Tongue sub-circular, slightly nicked and free behind. Vomerine teeth in two oval, oblique groups, their front edges on a level with a line drawn between the anterior margins of the choanae. Snout pointed, very prominent, once and one half to twice as long as the orbital diameter; nostril nearer the tip of the snout than the eye. Inter-orbital space as broad as or slightly broader than the upper eye-lid. Canthus rostralis distinct, rounded; loreal region concave, with a groove from the nostril to below the eye. Tympanum very distinct, with a distinct rim, four-fifths the diameter of the eye. Fingers free or fringed, the fringe most prominent between the bases of the fingers; first finger opposed, slightly longer than the second; no distinct rudiment of pollex. Discs very small; sub-articular tubercles small and very prominent. Toes fringed and with the exception of the fourth, webbed almost to the discs. A small inner and a

[2] Boulenger—Brit. Mus. Cat. Lizards, 2nd ed., ii., 1885, p. 322.

still smaller outer metatarsal tubercle, and a row of small tubercles on the underside of the metatarsals of the first to the fourth toes. The tibio-tarsal articulation of the outstretched limb reaches well beyond the tip of the snout. Skin of back almost smooth, with a few scattered small warts. Abdomen and underside of thighs granular, chest and throat smooth. A fold above the tympanum absent or feebly developed; another across the chest, and a well developed tarsal fold.

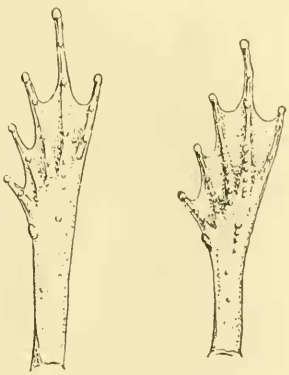
Colour (spirits):—Light bluish or greenish-grey above, uniform or with more or less distinct irregular marblings of darker grey. Sometimes a triangular dark mark between the eyes. A dark streak runs from the nostril, through the eye to behind the tympanum. Upper and lower lips spotted with white. A yellow streak runs from the front of the eye to the angle of the mouth. Undersurfaces yellowish. Arms with a row of black and white dots along the hinder border. *Front and hinder side of thighs with very accentuated black and brown reticulations on a yellow ground.* Outer border of tibial and tarsal regions with a row of black and white spots. Undersurface of foot and sometimes the web marbled with brown.

Total length of largest specimen, from snout to vent, 37.5 mm.

This species is allied to *Hyla freycineti*, D. and B., which it exactly resembles in general form. The following synopsis of characters will serve to distinguish them.

Hyla freycineti, *D.* and *B.*:—Upper surfaces covered with large raised warts. A prominent fold above the tympanum. Back dark brown, coarsely variegated with light brown. Hinder side of thighs dark brown with a few irregular lighter spots. Webbing of toes as in fig. 11.

Hyla latopalmata, *Günther*:—Upper surfaces smooth or with a few small, flat warts. A fold above the tympanum may be feebly marked or absent. Back greyish, uniform, or with irregular reticulations, never as distinct or as coarse as in *H. freycineti*. Hinder side of thighs pale yellow, reticulated with black or brown markings. Webbing as in fig. 12.



11. 12.

Fig. 11.—Foot of *H. freycineti*, D. and B.
Fig. 12.—Foot of *H. latopalmata*, Günther.

Dr. Bancroft has forwarded a fine series of this rare frog, and as his specimens show considerable differences from Dr. Boulenger's description of the type, I have redescribed the species.

Locs.—*Hyla latopalmata* has a wide and noteworthy distribution. Krefft says[3]:—"We believe this to be a well distributed species which occurs at Adelaide, near Sydney, and probably in the intermediate district." The above record of Adelaide is the only notice of the species south of Sydney. Since then, however, it has been recorded from the following localities:—Port Denison, Queensland (types); Brisbane, Queensland, and Richmond, New South Wales (Boulenger); St. Marys, near Sydney, Dandaloo on the Bogan River in Western New South Wales, Warroo in Queensland, King's Sound and Kimberley in North West Australia (Fletcher); the Australian Museum collection contains specimens collected by Mr. Robert Helms between Bourke and Wilcannia on the Darling River, Western New South Wales, a large series collected by Dr. Bancroft at Eidsvold, Upper Burnett River, Queensland, and five specimens collected by the author at Norton's Basin, Nepean River, New South Wales. Its distribution is mainly coastal, but it also occurs in Western New South Wales and South Western Queensland. Together with *Phractops brevipes*, Peters, *P. brevipalmatus*, Günther, and *Hyla rubella*, Gray, it goes to show that the watershed of Queensland is not such an efficient barrier to the migration of frogs as is the Great Dividing Range in New South Wales. These coastal forms have apparently found their way to the head of the Darling River system on the tablelands of Southern Queensland, and, following the permanent water, they have become established on the Western Plains of New South Wales and Southern Queensland.

Limnodynastes dorsalis, *Gray*.

In the preparation of the following pages I am indebted to Mr. J. J. Fletcher, M.A., for much help and valuable criticism. As explained in his paper,[4] he has, after examining a large series of *Limnodynastes dorsalis*, found certain variations, which, however, he refrains from naming. I have endeavoured,

[3] Krefft.—Austr. Vertebrata Fossil and Recent, 1871, p. 63.

[4] Fletcher—Proc. Linn. Soc. N. S. Wales, xxii., 1897, p. 675.

to show here, to what extent these variations may be termed geographical, and have separated the Eastern and Riverina forms from the Western. The accompanying map (fig. 13) shows the distribution of the various varieties as at present known.

Fig. 13.

The following key will serve to distinguish the varieties

(a) Back smooth. Markings in the form of isolated dark spots or bands on a light ground. A light dorsal stripe..... var. *typica*.

(b) Back warty, granular, or with flat glands. Back dark olive or brown, spotted or uniform. Rarely a pronounced dorsal stripe.

(c) Toes cylindrical and devoid of fringe, or fringed and webbed at the base. Back very dark, with or without very obscure spots or marmorations. Sometimes a complete dorsal stripe..... var. *dumerilii*.

(cc) Toes with a broad fringe, the first toe entirely webbed and the second about two-thirds webbed. Back with irregular dark smudges or occasional spots. A curved yellowish axillary mark.....var. *interioris*.

Limnodynastes dorsalis, *Gray*, var. typica.

(Plate ii., figs. 2 and 2a.)

Cystignathus dorsalis, Gray, Ann. Mag. Nat. Hist., vii., 1841, p. 91.

Cystignathus dorsalis, Gray, Grey's Journ. Exped. W. Austr., ii., 1841, App. p. 446.

Cystignathus dorsalis, Gray, Eyre's Journ. Exped. Centr. Austr., i., 1845, pl. i., fig. 2.

Limnodynastes dorsalis, Günther, Brit. Mus. Cat. Batr., 1st ed., 1858, p. 33.

Limnodynastes dorsalis, Boulenger, Brit. Mus. Cat. Batr., 2nd ed., 1882, p. 261.

Limnodynastes dorsalis, Fletcher, Proc. Linn. Soc. New South Wales, xxii., 1897, p. 675.

Size and habit moderate. Head three-fourths to four-fifths as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana. Tympanum distinct in most adult specimens, rather indistinct in young examples. Vomerine teeth in two straight series extending to the outer edge of the choanæ. Toes rather long, depressed, with a basal web. No outer metatarsal tubercle. Back almost invariably smooth ; in one specimen there is a granular dorsal patch.

Colour (spirits) :—Upper surfaces light brown with large, well defined, isolated dark brown spots or bands, which are arranged in two series. One commences on the upper eyelids, narrows and continues to the vent, and is divided by the light dorsal stripe. The other commences behind the eyelid, and

running along the back, breaks up into spots. These bands may be so broken up as to represent a chain of spots only, but the above pattern is always traceable. A light creamy dorsal stripe extending from the tip of the snout to the anus is always present. A dark brown band commences on the tip of the snout and continues to above the arm. A dark spot on the upperlip beneath the eye. Upper surface of shank barred with brown. Under surfaces creamy white, throat speckled with brown.

Length of largest specimen (snout to vent)	56 m.m.
Width of head	25 m.m.
Length of head (to level of tympana)	20 m.m.
Length of outstretched hind limb	80 m.m.

Examples of var. *typica* never attain the dimensions of the largest specimens of var. *dumerilii*, the western form, so far as is known, never exceeding 60 m.m. in length.

Locs.—Properly localised specimens of var. *typica* would appear to be rare in collections. It is, as far as I am aware, recorded from the following places only.—Houtman Abrolhos, Western Australia (Günther, 1858, and Boulenger, 1882), Geraldton and Perth, Western Australia (Fletcher, 1898), Eighty miles South of Perth (Austr. Mus.), King George Sound, Western Australia (Krefft, 1867 as *L. bibronii*, see below, p. 32), Port Essington, Northern Territory (Günther, 1858, and Boulenger, 1882).

There are no records of this or any other frogs occurring between King George Sound and Spencer Gulf in the Great Australian Bight, and, as the country is almost devoid of water permanent enough for breeding purposes, it seems improbable that any will be found there. However, as our knowledge of the distribution of frogs in South and Western Australia is very meagre, it is quite possible that some of the burrowing forms will be found to have adapted themselves to the unfavourable conditions of the Bight county as they have done in Central Australia. Another stretch of country where the occurrence of *L. dorsalis* is as yet conjectural, is between Geraldton on the West coast and Port Essington in the Northern Territory. But, as the present known distribution of this frog points to its having reached South-Western Australia by way of the North West coast, it seems reasonable to presume that it still occurs there.

Limnodynastes dorsalis, *Gray*, var. dumerilii, Peters.

(Plate ii., figs. 1 and 1a, Plate iii., figs. 2 and 2a.)

? Wagleria dorsalis, Girard, Proc. Acad. Nat. Sci. Philad., vi., 1853, p. 421.

Limnodynastes (Platyplectrum) dumerilii, Peters, Monatsb. Ak. Wiss. Berlin, 1863, p. 235.

Heliorana grayi, Steindachner, Reise "Novara," Amphib., 1867, p. 32, pl. ii., figs. 11-14

Platyplectrum superciliare, Keferstein, Gottingen Nachrichten, 1867, p. 346.

Heliorana superciliaris, Keferstein, Archiv. Naturg., xxxiv., 1868, p. 267, pl. v., fig. 7.

Heliorana grayi (Steindachner), Keferstein, Archiv. Naturg., xxxiv., 1868, p. 266.

Limnodynastes dorsalis, Günther, Brit. Mus. Cat. Batr., 1st ed., 1858, p. 33.

Limnodynastes dorsalis, Günther, Journ. Mus. Godeff., iv., Heft. xii., 1876, p. 47.

Limnodynastes dorsalis, McCoy, Prodr. Zool. Vict., 1880, v., p. 12, pl. xxxii., fig. 2.

Limnodynastes dorsalis, Boulenger, Brit. Mus. Cat. Batr., 2nd ed., 1882, p. 261.

Limnodynastes dorsalis, Fletcher, Proc. Linn. Soc. New South Wales, xxii., 1897, p. 675.

Limnodynastes dorsalis, Savage-English, Proc. Zool. Soc., 1910, p. 629, pl. li., fig. 3.

Size moderate to large. Habit moderate to very stout. Head two-thirds to four-fifths as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana. Tympanum hidden or visible. Vomerine teeth in two straight or somewhat arched series, extending to or beyond the outer edge of the choanæ. Toes moderate or short, fringed or totally devoid of fringe. A web more or less developed, the first toe occasionally almost entirely webbed. Outer metatarsal tubercle present[5] or absent. Back tuberculated, granulated, or with flat glandular swellings.

[5] In several of Dr. Bancroft's specimens from Eidsvold, Queensland, there is a very distinct outer metatarsal tubercle, resembling in one case a miniature shovel-shaped inner tubercle.

Colour (spirits) :—Dark greyish, brownish, or olive above, with or without a light dorsal stripe. Back clouded, marmorated, or spotted with black or dark brown, the spots in a few cases, as in North Queensland examples and occasional southern specimens, taking the form of more or less continuous obscure bands. Sides, gland at angle of mouth, and under surfaces lemon yellow; the sides are always, and the belly, throat, and the legs are sometimes reticulated with black or brown. Hinder side of thigh black, spotted with grey, or, as in some Queensland examples blotched with crimson. The under surfaces of the hind limbs in some Queensland specimens are uniform bright scarlet. Sometimes in specimens from Monaro Range, Southern New South Wales, the legs, sides of back, canthus and gland at angle of mouth, have bright burnished bronzy reticulations.

The following measurements are given for the purpose of showing still further racial forms. In all cases a specimen typical of its district has been selected and measured, and when the largest specimen is typical I have always measured that one. Thus it will be seen that Queensland specimens are very large and have very broad heads, and in North Queensland examples the leg is very short; Sydney specimens are much smaller and have a longer snout; tableland specimens are larger again and also possess a greater amount of webbing to the toes; and so on.

Table of Measurements in millimetres.

	1	2	3	4	5	6	7	8	9
From snout to vent	79.5	78	64	55	59	77	52	64	58.
Head, to level of tympanum	24	22	19	20	19	22	17	21.	17.
Width of head	37.5	36	30	25.5	28	37	22	26	25
Hind limb, outstretched ...	87	100	83	75	78	106	70	79.	70.

1. Cape York, Queensland, figured on Pl. iii., figs. 2 and 2a.

2. Burnett River, Queensland. Like the Cape York specimens most of these examples have practically no fringe to the toes, but the leg is considerably longer. In all respects they link up Cape York and southern examples.

3. Brisbane, Queensland. This specimen agrees almost exactly with Dr. Steindachner's figure[6] of *Heliorana grayi*.
4. Sydney, New South Wales. The largest Sydney example in the Australian Museum Collection. The average length is about 50 m.m.
5. Katoomba, Blue Mts., Central Tableland, New South Wales. A rather distinct race, with a greater development of fringe and web than Sydney examples. A specimen figured on Pl. ii., figs. 1 and 1a.
6. Jindabyne, Muniong Range, Southern Tableland, New South Wales. This specimen is regarded as the nearest approach to var. *interioris* on account of the excessive webbing of the toes. It is in all respects however, a true var. *dumerilii*.
7. Bathurst, Central Tableland, New South Wales. Specimen in the Macleay Museum. The type of marking on this example is nearer the Western Australian form than any other New South Wales specimen I have seen.
8. Launceston, Tasmania. These specimens are typically the common eastern form. They appear to differ from Flinders Island specimens in the obscurity of the dorsal stripe, which is quite distinct in the Island specimens.
9. Narracoorte, near the Victorian border in South Australia. These resemble the Bathurst specimens mentioned above in having very accentuated markings, and it will be seen that they agree fairly well in measurements also.

Locs.—A list of all the localities where this variety is known to occur is here given :—

Queensland :—Somerset, Cape York (Austr. Mus.), Cooktown, North-east Coast (Garman, 1901), Gayndah, Central-coastal (Günther, 1876, and Boulenger, 1882), Eidsvold, near Gayndah, Burnett River (Austr. Mus., presented by Dr. Bancroft), Brisbane, South-coastal (Austr. Mus.).

New South Wales. (a) Coastal District :—Clarence River, North Coast (Krefft, 1861), Nambucca River, North Coast (Austr. Mus.), Port Stephens, Central-coastal (Macleay Mus.), Sydney (Krefft, 1861, Fletcher, 1891. Austr. Mus.), Emu Plains, Central-coastal (Fletcher, 1891). Mayfield, Shoalhaven District, Central-coastal (Ogilby, in Etheridge and Thorpe, 1890), Illawarra, Central-coastal (Fletcher, 1890), Jervis Bay, South Coast (Fletcher, 1894).

[6] Steindachner—Reise "Novara," Amphibia, 1867, p. 32, pl. ii., figs. 11-14.

(b) Tablelands and Mountains (The Great Dividing Range) :—Tamworth, Northern Tableland (Fletcher, 1894), Inverell, North-west slopes (Fletcher, 1894), Springwood and Mt. Wilson, Blue Mts., Central Tableland (Fletcher, 1890), Katoomba, Tarana, and Coal River at Hartley, Blue Mts. (Austr. Mus.), Guntawang and Cullenbone, Central Tableland (Fletcher, 1890), Lucknow near Orange, Central Tableland (Fletcher, 1892), Bathurst, Central Tableland (Fletcher, 1892, and Macleay Mus.), Rylstone, Central Tableland (Krefft, 1861), Cooma, Southern Tableland (Fletcher, 1892), Jindabyne and Berridale, Southern Tableland (Austr. Mus.).

Victoria:—Benalla, North-eastern (Fletcher, 1898), Warrogul, South-eastern (Fletcher, 1890), Melbourne (McCoy, 1880), Lake Boga, North-west (Krefft, 1861).

Tasmania:—Ulverstone (Fletcher, 1898, and Savage-English, 1910), Hobart, and Fingal (Savage English, 1910), Launceston (Austr. Mus. and Savage-English, 1910), Flinders Island, Bass Strait, (Austr. Mus.).

South Australia :—Adelaide (Peters, 1863, and Krefft, 1867 and 1871), Narracoorte, near the Victorian border (Austr. Mus.).

The great amount of variation within this form is to be credited purely to its diversified environment. Where conditions are so unvarying as they are in Western Australia, we do not find nearly the same amount of variation in the typical variety. The thickly timbered gullies of the Great Dividing Range, the sandstone country around Sydney, and the rich, sub-tropical, well-watered districts of the Northern Rivers and Queensland, all facilitate the development of specialised variations. But, just why examples from the Great Dividing Range should have a greater extent of webbing to the toes, or why Sydney specimens should, on the whole, be smaller than most others, is only to be accounted for by some local influence, the character of which has yet to be observed.

The brilliant colours which occur in the breeding season are due, as pointed out to me by Mr. Fletcher, to the abounding vitality at this period, which in *L. dorsalis* affects also the mucous glands, causing them to become enlarged and to exude freely. With regard to breeding colours I have two interesting

records to make. In a large specimen from Jindabyne, Southern New South Wales, collected by Mr. A. R. McCulloch, the back and legs were suffused with a bright coppery colour, approaching that of *Hyla aurea*. The ground colour was dark green, and the undersurfaces, as is usual in breeding specimens, was a bright lemon yellow. The coppery marmorations were confined to the head, sides of body, and the upper surfaces of the limbs. Again, in a large series of specimens from Eidsvold, Upper Burnett River, Queensland, the legs and sides showed bright scarlet markings. Thinking that this might be due to the action of the preserving fluid, as is sometimes the case, I wrote to Dr. Bancroft, who collected the specimens, and who very kindly forwarded me a drawing showing the distribution of the colours during life. The throat, gland at angle of mouth, and sides of the abdomen are bright lemon yellow, while there is a yellow streak marking a glandular area on the side of the back. The chest, and the belly and symphysis are creamy white. The groin, front side of thighs, and underside of shank is brilliant red. Reticulations of black or brown on the belly may or may not be present, and are not breeding colours. In a series of breeding specimens, collected during the phenomenally rainy season of January and February, 1910, at Katoomba, Blue Mts., these reticulations were exceptionally marked; a specimen is figured on Pl. ii., figs. 1 and 1a.

The Cape York examples, obtained by Messrs. C. Hedley and A. R. McCulloch in 1907, present a rather distinct form (Pl. iii., figs. 2 and 2a.) The vomerine teeth are very strong and extend well beyond the edge of the choanæ; the toes are short and cylindrical and totally devoid of fringe, while the marking approaches that of var. *typica*, a very distinct light dorsal stripe being present. However these variations are entirely linked up by the Burnett River series.

After the examination of a very large series of this frog from many localities Mr. J. J. Fletcher[7] says of its colour varieties:—"Tasmanian examples show a fairly established differentiation into a spotted variety, with at least an incomplete dorsal stripe, and an unspotted variety without a dorsal stripe. In Victoria the differentiation seems to be fairly well established. In Western Australia there seems to be only the

[7] Fletcher—Proc. Linn. Soc. N. S. Wales, xxii., 1897, p. 675.

spotted variety, but in this the pattern has become more definite and accentuated, and the dorsal stripe more striking. In New South Wales we get commonly an unspotted variety, and more rarely a variegated but not satisfactorily spotted variety." It will appear from this that it is impossible to separate eastern and western examples on colour alone, and while it is equally evident that the presence of a dorsal stripe and spots in eastern examples must be regarded as characters likely to arise quite erratically, and which are not indicative of racial variation, yet in no eastern examples are there such accentuated or isolated spots as in western specimens, nor is the dorsal stripe so pronounced, and in the few cases where it does occur, it is generally incomplete.

I am indebted to Mr. E. A. Briggs, of the Australian Museum, for the only South Australian specimens I have seen. The four specimens were collected at Narracoorte, in South Australia, near the Victorian border. They all have very accentuated markings on the back, resembling in this respect the specimens from Bathurst, Central Western New South Wales. The markings however are in the form of irregular marmorations, thus differing from the very accentuated markings of var. *typica*, which are disposed in definite bands. In one specimen there is a faint, broken indication of a dorsal stripe. The under surfaces are densely reticulated with black. The back is granular and in one example there are a few flat warts. The toes are moderately webbed and fringed, and the fingers resemble those of var. *typica* in being pointed. There is no doubt however that South Australian specimens are much more closely allied to the eastern than the western form.

Mr. H. H. Scott, Curator of the Victoria Museum, Launceston, has recently forwarded to the Trustees four fine specimens from Tasmania. They are typically the eastern form, but have very prominent warts on the back which sometimes form short longitudinal ridges. The upper surfaces are dark purplish-brown and rather indistinctly variegated. In two specimens there is a faint indication of an interrupted dorsal stripe. The under surfaces are faintly and delicately spotted with brown or grey. The toes are but slightly webbed and fringed.

Short as is Dr. Peters' description[8] of *Limnodynastes (Platyplectron) dumerilii*, there is sufficient to identify it with the eastern form. It is rather unfortunate that his name should have to be used however, as North Queensland examples, although showing close affinity to New South Wales specimens, are very different from the South Australian form described by him.

I am unable to refer to Keferstein's original description[9] of *Platyplectrum superciliare* and so do not know the locality of his type. But as his somewhat obscure figure[10] published later represents the eastern form I have included his name in the synonomy of var. *dumerilii*. Dr. Steindachner's fine figure[11] of *Heliorana grayi* leaves no doubt as to the form implied, and represents a much more typical eastern example.

Mr. Gerard Krefft mentioned[12] a frog by the name of *Limnodynastes bibronii*, giving no description or remarks, but appending the localities Adelaide and King George Sound. I am not aware of any other reference to this name and it is probably nothing more than a *lapsus calami* for *L. dumerilii*. This view is strengthened since Krefft knew and recognised *L. dumerilii* as distinct, but did not mention it in his list of species on this occasion.

In 1878 Dr. E. P. Ramsay exhibited[13] before the Linnean Society of New South Wales three specimens of a burrowing frog allied to *Limnodynastes dorsalis*, Gray, taken by Mr. James Ramsay, near Merool Creek, Lachlan District. After examining one of these specimens, two having apparently been lost since, together with two others from Yandenbah, Riverina, New South Wales, I have decided, as they are so distinct, to separate them under the varietal name of *interioris*.

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[8] Peters—Monatsb. K. Preus. Akad. Wiss. Berlin, 1863, p. 235.
[9] Keferstein—Gottingen Nachrich., 1867, p. 346.
[10] Keferstein—Archiv. f. Naturg., xxxiv., 1868, p. 267, pl. v., fig. 7.
[11] Steindachner—Reise der "Novara," Amphibia, p. 32, pl. ii., figs. 11-14.
[12] Krefft—Cat. Nat. and Industrial Products N. S. Wales, Paris Exhibition. 1867, App. p. 107.
[13] Ramsay—Proc. Linn. Soc. N. S. Wales, ii., 1178, p. 73.

LIMNODYNASTES DORSALIS, *Gray*, VAR. INTERIORIS, *var. nov.*

(Plate iii, figs. 1, 1a, 1b, and 1c).

Size large, habit very stout. Head five-eighths as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana. Vomerine teeth in two stout groups not extending out beyond the outer edge of the choanæ. In the type, the specimen figured, the vomerine teeth are exceptionally stout. Foot very broad; toes short, stout, with a very prominent fringe and with a well developed web which extends to the extremity of the first and almost to the extremity of the second toe; third, fourth, and fifth toes about one-third webbed. No outer metatarsal tubercle. Back smooth or with a leathery texture.

Colour (spirits).—Light brown above, with a few large brown markings, situated on the sides of the back. These markings border above a lighter brown band which starts behind the eyelid and continues to the groin. A very distinct brown band starts on the canthus and extends on to the side where it breaks up into a series of reticulations. Upper-lip brownish. A curved half-moon shaped yellowish axillary mark.

Total length of largest specimen (Type)	84 m.m.
Length of head to level of tympana	23 m.m.
Width of head	38 m.m.
Length of outstretched hind limb	102 m.m.

The distinguishing characters of this variety are:—

1. From *L. dorsalis* var. *typica* it differs in the broader head, stouter form and much larger size, the excessively webbed and fringed toes, the stout vomerine teeth, and the absence of a definite pattern of colour marking.
2. From *L. dorsalis* var. *dumerilii* it is also distinguished, though less definitely, by the greater extent of webbing and fringe to the toes, and the short, stout vomerine teeth. The head is broader and the peculiar axillary mark is absent in both var. *dumerilii* and var. *typica*.

Locs.—Four specimens are in the collection. The type was collected at Merool Creek, Riverina, New South Wales, by Mr. James Ramsay. Two other specimens almost as large, were collected by Mr. K. H. Bennett at Yandenbah, Riverina; a fourth, somewhat smaller specimen is unfortunately without data.

The above is a very distinct geographical variety and has very little in common with the typical form. Although approached by some examples of var. *dumerilii*, it is nevertheless constantly separated by the characters given above. It is worthy of note however, that the specimens of var. *dumerilii* which show the closest affinity to this form, occur on the Great Dividing Range in a region where the range may be said to be the eastern boundary of the Riverina District, and the habitat of var. *interioris*.